3: Robequain --315-316 S-5 (no date) 1944 Laotians
116, 231

"Pasturage and Fishing Products. While the European's influence is seen in new types of agricultural products exported from Indo-China, it has hardly affected pasturage products or fishing, which remain almost entirely in native hands. They [316] have been seriously studied but this has not yet resulted in practical improvements. The back country plateaus, particularly in Laos, have frequently proved suitable for raising cattle and antelope. But the obstacles in any tropical country to this type of enterprise are well known--there are the ravages of epizootic diseases, the dearth of pasture in the dry season, the natives' carelessness and ingrained habits and primitive agricultural techniques."

10: d'Orleans--264 T-3 (1891-92) 1894 Laos
116, 231, 342, 361

"We find some villages in the afternoon, and I get out at one of them--Sop Kin. It contains about twenty huts--small houses built upon piles like those of the Thai's, but more elegant, and half hidden amongst clumps of flowering trees, orange groves, palms, cocoanut palms and bananas. The mulberry tree is also cultivated for the purpose of rearing silkworms."

10: d'Orleans--265 [3] T-3 (1891-92) 1894 Laos
116, 231, 342

"... The houses in the village [LSS: at Muong Ngoi] are built upon piles; in front of them, I notice some round cages containing doves, and these being half enveloped in stuff to protect them from the sun, produce from a distance, the effect of Chinese lanterns."

10: d'Orleans--345 T-3 (1891-92) 1894 Laos
116, 231, 252, 262, 527

[LSS: During the New Year celebration in Luang Prabang.]

"I notice also some iguanas, the flesh of which is said to be excellent, but they are so quick in their movements that they can only be caught by dogs trained to the work. Flowers, including piles of gardenias picked in the gardens, four varieties of orchid and red and white flowers from different trees, are also bought in large quantities for the decoration of the pagodas, and at the stalls set up in the open is sold vermicelli cooked with grasshoppers, a small bag made out of banana leaves answering the purpose of a cup."

"Higher up there were two or three villages that seemed to have inhabitants of both sexes and all ages, some of whom we now and then met making their way along the winding, perpetually climbing road. The sound of our horn drove them mad. The more fearful tried their best to climb the sheer earth or rock wall of the blasted mountain-slide; the others, as if imploring us to be merciful and realize that they would run away if they could, snatched themselves bare-headed and, placing their hats against their stomachs, tried to break their spines in kowtowing to me as they might to a long dead emperor suddenly returned to earth. A few, less obsequious, or less quick-witted, watched us pass with open mouths and stupefied expressions, bawling children scurrying in and out between their legs. Near the top of the climb there suddenly appeared horses and other pack-animals, and the panic we created among these unusual carriers in Indo-China could not easily be described. We passed not a [265] few traveling pigs along the way too, for wherever there is Chinese culture there must also be pork. Though they are credited with infinite patience, the Chinese will not drive pigs to market. But the Annamese, more afraid of work perhaps, rather than more patient, usually try to, with a cord tied to each porker's leg. This may possibly be easier than the Chinese way of bodily carrying them, two on a one-man shoulder-pole or one between two men, so that carrier and carried, bound to market in this undignified manner, seem fellows in misery. In Hanoï and the larger towns of Annam this more certain form of transportation may also now and then be seen. But the Annamese pig is ordinarily

driven, which is hard on motorists. For most of the pigs we met were too strong for the holder, and yet not quite strong enough to get away entirely and dash themselves over the mountain-side. Therefore, as they seemed bent on suicide in any form--and who could blame them?--the car always had to wait while the would-be pig-driver and several of his fellows united in one mighty tug of war that dragged the squealing animal out from under our wheels. For the most foolhardy of Annamese chauffeurs, however disdainful of the pig-driving populace, would scarcely have risked running over one of these porcine obstructions on this pathway along the bottomless pit."

23: Franck--276-277 T-2 (1924) 1926 Laotians
116, 231, 242, 361

"Small villages appeared once more, this time of the real Laosians, villages of thatched houses raised on poles [277] well above snakes and possible floods, with a bit of cultivation about them. Each house had rounded gable walls at either end, one a kind of family veranda all but covered with a curving roof of thatch, where visitors are received and the family does its gossiping, the other a granary and store-room, where the cooking also seemed to be done. The walls of the houses, everything possible, in fact, were made of strips of narrow palm-leaves folded over a stick, forming panels overlapped like shingles. Many small but stout horses dotted the landscape here and there."

23: Franck--279 T-2 (1924) 1926 Laotians
116, 231, 342, 793

"I spent the morning in a hot walk about the scattered thatched town, [EJ: Xieng Khuang] climbing to jungle-guarded half-ruined old stupas on the rounded hills behind it. Priests of the yellow robe had again appeared, dawdling about their simple monasteries with the leisureliness of men who know that to step on an insect means to be set back that far on the long and difficult road to Nirvana. Speaking of insects, the people of Tran-ninh boast that they are never troubled by mosquitos, because, all their domestic animals being at home under their pole-legged houses, these pests are so busy down there that they never trouble to rise to human height. The custom of living over unconfined stables is further exonerated by the warmth the animals are reputed to give the householders above--for so thin-blooded a race needs its central heating-plant also, during the short tropical 'winters.' "

23: Franck--292[2] T-2 (1924) 1926 Laotians
116, 231, 361

"The villages were as much alike, once one had seen a few of them, as our own stereotyped cities: from half a dozen to a score of woven-bamboo-and-leaf shacks, light as big baskets, raised on posts, in a little clearing overrun with children, curs, pigs, and chickens--four forms of life all but universal the world over--and little else except the surrounding jungle. Chickens of both sexes, perhaps I should have specified, for in this one matter the people seemed to believe in monogamy and to have as many roosters as hens."

23: Franck--316-317 T-2 (1924) 1926 Laotians-1-2
116, 231, 643

"The king of Luang Prabang keeps a number of royal elephants; and he is no nonentity as a business man either, by the way. Supplementing his salary, if the word suits a monarch,, of forty-six thousand piastres a year, and thereby offsetting his consumption of silk stockings, he has much private property, including great forests and sawmills, in [317] which many of his elephants work for him. For a time some of the royal elephants were assigned the task of dragging rollers used in the making of roads about the capital, but they are a tender beast, for all their size and reputed longevity, and even with only four or five hours of labor a day, at their two-mile-an-hour gait, with the privilege of resting every third day, two of them died from this unwonted exertion. The king, evidently no figurehead in his capacity as business manager of his personal estates and property, protested, and from four to six water-buffaloes to each roller now take the place of an elephant.

In theory the many wild elephants in the Kingdom of the Divine Buddha also belong to the king. When new recruits are needed in the royal stables, some of the wild beasts are caught by digging pits. Then a tame and a wild one are chained together, leaving the wild elephant to tug furiously at a collar with sharp iron points in it. The most bellicose are fastened to a tree by a lasso about a hind leg until they are worn out with struggle and hunger, when the two largest éléphants de chasse available take

the captive between them and shake and roll him until he decides, like the man who foresees the lawyer fees involved in an action for divorce, that after all he will be happier in the domestic state. Most of those captured do not wait for this third degree, but, suddenly resigned to their new fate, give in to the barbed collar and stroll homeward with their false brother, pulling up tufts of good grass as they go and calmly tapping each mouthful on a front foot to shake the earth off the roots before transferring it to their dainty mouths."

23: Franck--319-320 T-2 (1924) 1926 Laotians
116, 231, 643

"It became more and more evident however, that Tiao Sisavang Vong Somdet Prah was not born anybody's fool, even if circumstances and the foolishness of his father Zacharine had left him and his kingdom in an embarrassing position. There was something behind his Oriental-Gallic courtesy and his almost perpetual smile. Nor did he seem to take himself or his regality or his white elephants or any of the rest of his royal trappings too seriously. On this subject of white elephants, by the way, he mentioned that one was now supposed to be on its way to him, some Laotian merchants among his loyal subjects having captured or purchased such an animal that had been seen in a distant part of his kingdom. He thought Bangkok used to have one but that his Siamese peer was now forced to do without this adornment to their respective kinghoods. They were not white anyway, he went on, but rather a pinkish light-gray, like the albino water-buffalo; and his manner implied that whatever his royal cousin of Siam might think about it, a [320] white elephant to him would be merely an interesting addition to his menagerie. 'May you live as long as an elephant!' is a common form of greeting in some parts of the East; but quite aside from the doubtful kindness involved, it is based on one of those many mistaken beliefs of mankind, according to the king, corroborated by all the French present, who asserted that no elephant ever lives longer than have many men and women."

68: Mouhot--125 N-5 (1858-61) 1864 Laotians
116, 231, 489, 492

"In all this mountainous region [HD: i.e. from Korat in Siam north to Luang Prabang] elephants are the only means of transport. Every village possesses some, several as many as fifty or a hundred. Without this intelligent animal no communication would be possible during seven months of the year, while, with his assistance, there is scarcely a place to which you cannot penetrate."

68: Mouhot--126-129 N-5 (1858-61) 1864 Laotians
116, 231, 489, 492

"We must not, however, exaggerate his merits. Probably the saddles used by the Laotians are capable of great improvement; but I must admit that the load of three small oxen, that is to say, about 250 or 300 pounds, is all that I ever saw the largest elephants carry easily, and 18 miles is the longest distance they can accomplish with an ordinary load. Ten or twelve miles are the usual day's work. With four, five, or sometimes seven elephants, I travelled over all the mountain country from the borders of Laos to Louang-Prabang, a distance of nearly 500 miles.

All this eastern portion, with the exception of a few villages filled with 'black-bellied savages'--so called from the manner in which they tattoo themselves--is inhabited by the same race, the 'white-bellied Laotians,' who call themselves Laos, and are known by this name to all the Siamese, Chinese, and surrounding nations. [127-128 contain illustration] [129]

The black-bellied or western Laotians are called by their eastern brethren by the same name which, in Siam and Cambodia, is bestowed on the Annamites, Zuène, Lao-Zuène. The only thing that distinguishes them is, that they tattoo the under part of the body, principally the thighs, and frequently wear the hair long and knotted on the top of their heads. Their language is nearly the same, and differs little from the Siamese and Eastern Laos, except in the pronunciation, and in certain expressions no longer in use among the former."

Tribal Tai

619 The Neua-Thais. The Neua-Thais differ very little, in all
361 respects, from their fellows. They generally live on higher ground than the other Thais, but they change the location of their village quite frequently. [241] [Illustration] [242] [Blank page] [243]

291 The women knot their skirts under their armpits, above their breasts, and always wear a very short jacket made of cotton, silk or velvet, depending on the season.

●231 They engage in sericulture, and with the silk spin and weave brocaded cloth with harmonious colors.

779 At the same time as ancestor worship, the Neu-Thais practice an attenuated form of Buddhism. Pagodas are rare and the bonzes, few in number, serve several centers in turn.

461 Their character is docile. They do not have a very marked taste
276 for trade and are content to be excellent farmers and livestock breeders. Unfortunately, they are inclined to be opium smokers. This is doubtless due to the proximity of the Meos and Yaos who are the producers of the drug.

619 The Phou-Eunes. This branch of the Thai family is very close to
101 the Laotians in mores and customs.

There are only a few modifications in costume and language, modifications due to the age-old proximity of the Annamites and the continuous relations which have existed between the two peoples.

[438] These latter may be explained by the fact that the territory long inhabited by the Phou-Eunes in the east and southeast of Tran-Ninh is situated on the Tonkin Gulf side, and that their produce naturally flows towards the ports on the Annamite coast (1).

(1) To be sure, there are several groupings of Phou-Eunes in the Mekong basin, in Tran-Ninh, to the northeast of Vien-Tiane and in Camkeut-Cammon.

361 The Phou-Eunes prefer to live in high valleys and on high plateaus where the climate is quite severe during the winter. They are more reserved in character than the Laotians, more industrious and less inclined to celebrations and festivities of all kinds.

779 Their religion is Buddhism, but the bonzes are less numerous than elsewhere. It is probable that the little taste which Phou-Eunes have for the religious life is due to the influence of nearby Annam, where the bonzes are a long way from being venerated and coddled as they are in Laos.

291 cover their bust with a small short jacket which is very close-fitting and bright in color. It has a heart-shaped opening on the chest and, like the men's jacket, is ornamented with galloons and passementerie. For celebrations and ceremonies Lu women wear a heavy turban on their head which is folded flat or pleated, shaped like a mitre and generally made of black silk spangled with gold.

301 Both men and women pierce the lobes of their ears [246] with a broad opening, into which they introduce hollow gold or silver cylinders which are sometimes as large as three centimeters in diameter.

306 Great lovers of jewelry, the Lus number skilled jewelers and goldsmiths among them who make hair coil plaques, ear cylinders, flat braided metal belts with wide chased and checkered buckles, bracelets, rings, hilts and sheaths for daggers and swords, etc. [Illustration alongside text here]

411 The Lus almost always wear daggers and swords. Each of them, so to speak, possesses a rifle, generally flintlock, which by the shape of
x93 the stock, the length of the barrel and the many bands which adorn it greatly resembles the long Moukhala so dear to our Arabs in Algeria.

[36] Lu villages are clean, and the houses are arranged in a checkerboard pattern.

[33] The Lus have a high reputation as breeders of oxen and horses.

527 A great lover of celebrations and parades, this boisterous people sets off gunpowder at every opportunity, and there is no festival, private or public, so small that it is not accompanied by salvos and fireworks.

[77] From their contact with the Burmese the men have retained a [247] [Illustration] [248] [Blank page] [249] taste for dancing and for
535 sword fights mingled with dance steps in which they manifest a real grace and elegance.

"Among other forms of amusement, the men execute, with a truly remarkable suppleness and skill, sword dances which are perfectly elegant. Naked to the waist, with their trousers rolled up and bunched and a wooden sword in each hand whose cutting edge has been dipped in dye so that the thrusts will leave a mark, the two champions confront one another. Moulinets, parries and returns follow one another without apparent effort, and the movements are undulating and rapid but without any abruptness. The men seem to be caressing one another, not fighting, and yet the slashes leave their colored traces on the skin of the vanquished. Direct thrusts are forbidden, but the entire body from head to foot is fair game for the opponent. Thus during the

149: Reinach--188 G-8 (no date) 1901 AM1 Indochina

Laotians AM8

Kha

"The most varied types are to be found among the Khas. Some are just like the American 'Redskins,' others have a heavier and more bestial appearance, and still others are small and puny. Certain of them are veritable savages who have never heard of clothing and live in shapeless huts, taking to the trees or fleeing into the forest at the slightest alarm, with monkey-like habits and the instincts of wild animals.

"Others, on the other hand, wear clothing quite like that of the Lus, build proper houses and enjoy a comparative degree of civilization. But they all carry a bag of dark blue cloth which never leaves them.

"It is a long way between the primitives which some of them are and the half-civilized beings which the better policed among them are. Thus the greater part of these poor folk have long been in servitude, especially in the northern and central part, and have become the humble servants of more highly refined races which exploit them.

"In the south, however, some tribes of particular origin have been able to resist all outer authority and are still free and independent today." [Lieutenant-colonel Tournier (Superior Resident in Laos), "Notice sur le Laos français," in Revue Indochinoise, Hanoi, 1900.]

The Khas of northern Laos. All the Khas of northern Laos have been brought under control, and even emancipated, and live grouped in villages or hamlets which are distributed over the mountainsides, generally near some watercourse.

Houses. Kha houses, which are built on piles and in the same style as those of the Laotians although in less careful fashion, are set down without any care for symmetry or alignment. They are generally much smaller and built for a single family. The houses are extremely dirty.

The Khas have very little in the way of large livestock, and so the under part of the houses shelter only pigs and poultry.

A few Kha tribes, such as the Khouenes (white and black), Khmous and Lemets, which are the most civilized have quite fine villages with well built and carefully aligned houses. A pagoda will sometimes be found in these.

Costume. Khas of both sexes wear their hair long and wound in a coil on the nape of the neck or top of the head. The [253] Lemets comb part of their hair down over their forehead and cut it off straight at the eyebrow level.

101 [261] [Illustration] [262] [Blank page] [263] As far as marriages, deaths, etc. go, we find practically the same customs among the Kha tribes of southern Laos as among their fellows in northern Laos.

231 It should be noted that the Rades breed a variety of small horses 439 which are highly prized in Annam, Laos and Siam.

533 "These Khas love music and dancing. Their favorite instruments are gongs and bells.

534 "A set of gongs consists of seven, nine or twelve single ones. Made of copper and often very beautiful, these gongs take the shape of a cylinder from forty to eighty centimeters in diameter, only one end of which is closed by a vibrating plate. The cap worn by our judges and professors, although on a smaller scale, gives a fairly clear idea of the shape of these instruments. A few of the instruments are artfully cast and ornamented with much elegance. There is a solid ring about a third of the way along the gong's length which is part and parcel with the rest of the gong and makes it possible to hang it up on a side of the house, at about the height of a man's head, by means of a rattan thong fastened to the frame.

"The performers stand facing the battery and pummel it with their fists, taking care to strike the vibrating plate in the center so that it will emit a true tone. This procedure produces perfect musical notes, which are accompanied by the dull resonances of the tom-toms and the sharp sonorities of the bells made of a copper and tin alloy. The gongs bring a high price, and when it is a fine one a complete series is worth from 1,200 to 1,500 francs.

"In some villages the performers each take an instrument and hold it in a sling fastened to their shoulder, then form a column in single file. This Indian-style procession marches from the center of the house towards one of its extremities, striking more and more gently as it moves away from its point of departure. Then it returns to the center, unleashing a compensating crescendo. The maneuver begins again towards the other end of the house, and the musical promenade continues until the musicians are exhausted.

535 "*When the Khas begin to play and perform the Kimlang (a very* 272 stirring war dance) and the warriors grow excited from dancing and 579 from drinking rice wine, it is wise to make them stop as soon as they begin to pick up their weapons, for when drunk with alcohol and enflamed with ardor they are no longer masters of themselves.

714 "War dress includes feathers in the hair and a sort of cross of Saint Andrew formed of cloth rolled and crossed on the chest. Weapons, quivers, arrows, crossbows, bucklers, spears and swords complete their equipment.

Hill Tribes

595 There is polygamy among the Meos, and the Meo women do not enjoy any higher regard than the Kha women.

[101] The Yaos. The Yaos have the same origin as the Meos, and are strikingly like them in many respects. Their mores, their beliefs and their habits are identical.

619 As we have seen above, the Yaos are divided into three varieties, these being the Lantenes, the Khao and the Ao-Tchaine.

291 The Lantenes (blacks) wear broad trousers, a long smock buttoning
302 at the side and a turban, all made of black cottonstuff. They wear their hair long and either wound under a turban or braided in Chinese style.

[342] Their houses are like those of the Meos and shelter several families, each of which has its own quarters. They are generally clean and well kept-up.

593 The mores of the Lantene Yaos are patriarchal, and these folk
562 are monogamous. The women are very reserved and do not let themselves be seen much by strangers. They enjoy a certain respect and are treated with consideration by their husbands.

231 The Lantenes are great livestock breeders, and cultivate the opium
241 poppy in addition to rice and maize. They are skilled hunters of wild
224 animals, and each man owns a rifle from which he is rarely separated.

[212] Besides a dialect peculiar to them, they speak Quoan-hoa (a
198 Cantonese idiom), and many of them can write Chinese characters.
101 The Khao Yaos are less outgoing than their fellows and do not greet strangers with as much good will.

291 The men's clothing is like that of the Lantenes, [269] but the women are garbed in a different manner and wear their hair in a special way which has earned their tribe the name "Khao" (horns).

Over a pair of black trousers ornamented with colored embroidery and held in place by leggings, Khao Yao women wear a tunic which comes down to the knees but the flaps of which are fastened to the belt. This tunic also has colored embroidery on the chest, back, neck and cuffs, and is held shut with wide silver hooks.

302 Their hairdress consists of a coil which is smeared with wax and lacquer to hold it in place and in which a wooden socket is imbedded. A light bamboo framework is inserted into the socket, and over this is spread a red cloth or a black cloth embroidered in red. The women thus appear to have two horns on their head.

301 Silver jewelry, neckbands, bracelets and ear pendants are worn by the Khao Yaos.

313 M. Lussan merely had to see that they were followed at a distance by two light pirogues, the duty of the latter being to explore the banks and islands and push back into the current any of the small rafts which might have gone aground along the way.

"All the logs were then halted above the rapids by lookout posts judiciously located at narrow points in the river. They were again set free, but this time singly in order to traverse the rapids. Below the rapids the logs were collected by the same lookout system, the lookouts now being located at two points on the downstream reaches. The distance between the two points had been calculated so that the logs would pass by the first outpost at night and be collected at the second outpost twelve hours later, that is to say during the day." (Bulletin économique de l'Indo-Chine, 1900.)

We shall study below, in Chapter VII, the methods of cultivating, extracting and exploiting the forest resources and the measures which the administration has taken for their conservation and development.

[309] 2. FAUNA, ANIMAL HIDES AND REMAINS

136 The fauna of Laos is scarcely different from that of India. It is just as varied and just as abundant, proportionately speaking.

Domesticated Fauna

•231 Domesticated fauna includes the elephant, horse, buffalo, ox, pig, goat, poultry (chickens and peacocks), turtle-doves, dogs and cats (some with a straight or curved tail, others with a short tail ending in a ball, and still others without a tail, of Siamese origin). [Illustration alongside text here]

Wild Fauna

136 a) Mammals and rodents. These animals include the wild elephant and the rhinoceros (both Indian and Sumatran varieties, that is to say with one or two horns), the buffalo, the ox, the stag, the elk, the buck, the gazelle, the agouti, the wild boar, the otter, a great variety of monkeys (lemurs, paresseux, dormeurs, macaques, gibbons), the scaly anteater, the mongoose (ctenomis), the genet, the civet cat, the shrew-mouse, the polecat, the ordinary squirrel

231

Fig. 81 /p. 309/ An elephant with its pack-saddle.

and the flying squirrel (polatouche assapanick), the muskrat, [310] the water rat, the palm-squirrel, the field mouse, the mouse, the bat, the flying fox, etc. 136

In the forests one also finds domesticated animals which have reverted to a wild state, such as goats, bucks, dogs, cats and most kinds of gallinaceous birds (1). [231]

(1) Some notices also remark the presence of tapirs, but we cannot vouch for the accuracy of this information.

b) Carnivores. These are represented by the tiger, the jaguar, the ocelot, the panther, the tiger-cat, the wild cat, the climbing bear, the cave bear, etc.

c) Birds. In addition to numerous varieties not yet identified, the following have been noted:

1. Long-flying birds: first the birds of prey, such as the mountain eagle, two kinds of vultures, the sparrow hawk, the falcon, the kite, etc.; then the passerines, doves, etc., such as the peacock, the gilded pheasant and the silver pheasant, the wild cock and hen, a large variety of parakeets, the toucan, the hooded horn-bill, the crow, the magpie, the jay, the swallow, the lark, the sparrow, the lapwing, the partridge, the quail, the snipe, the turtle-dove, the pigeon (several varieties), the blackbird, the crane, the green woodpecker, the owl and the screech owl, not to mention a large number of colibris, humming-birds, etc.

2. Water birds and grallatores: the fishing eagle (two varieties), the pelican, the wild goose, the marsh hen, the plover, the cormorant, the grebe, the flamingo, the marabou stork, the heron, the kingfisher, the egret, the swan, the gull, the wagtail, etc.

Reptiles

a) Ophidians. Since varieties of this class are quite numerous, we have summarized them in the opposite table, which is based on a notice by M. Grand, government commissioner in Luang-Prabang.

824 314 386 when mixed with curcuma. The trees are found in the forest, and sometimes in gardens.

10. Yams.

262 271 The yam is an edible tubercle of the Dioscorea family. It is represented by two varieties, the white and the black, which are called "Mane-Phuek-Khao" and "Mane-Phuek-Dam" in Laotian. These tubercles are the main standby when there is a scarcity of rice and [335] maize, but in ordinary times they are used only to supplement the usual diet.

11. Taro or cush-cush (Mane-Pa).

Taro is also a food plant of the Aroïdées caladiées genus (Caladium esculentum). Like the yam, it is one of the most useful edible tubercles in times of famine.

12. Medicinal plants.

824 278 Designated by the generic name "Ya" in Laotian, these plants are represented by special types of orchids, roots, bark, berries, leaves and even pieces of wood of different kinds, the whole forming an assortment of medicaments.

[438] The Khas are the ones who collect these various products from the depths of the forests, and they trade them either to Chinese or to Laotians for money or other goods.

[435] Certain of these plants and barks are used by the Laotians while others, such as the leaves from orchid plants, for example, are purchased by Chinese merchants at prices which vary between 33 and 62 francs per hundred kilograms.

13. Cloves.

The clove tree (Caryophyllus aromaticus. Kane-Phou in Laotian) is quite scarce in Laos. Cloves are mixed with various ingredients in masticatories or are taken as medicine.

Cultivation of the clove tree ought to be developed in Laos because of the high value of its flowers which, when dried on the tree, constitute the cloves of commerce.

14. Beeswax (Phung).

222 [231] 314 [438] Beeswax is much sought-after in Laos, where a great deal of it is consumed. It is a scavenging product par excellence since, except in the Sib-Song-Pahn-Na, the inhabitants do not practice apiculture and are content to go into the forest and look for honeycombs in order to extract the wax. The latter is used for domestic needs and for worship ceremonies. It also forms the basis of quite an important trade.

149; Reinach--247 G-3 (no date) 1901 AM1 Indochina
Laotians AM8

"What makes everything easy and is used for everything is this hollow wood, at once so solid and so light, the incomparable bamboo. In France we see it only in the form of pleasant but useless little articles of furniture. Here bamboo is sufficient to every task. It provides the whole house, frame as well as walls. The inner walls and floors are made of matted bamboo lathwork. Yet such a house, with its furniture, bed, tables, various accessories and its luxury objects, if you are a person of refinement, can be improvised for you in a space of two hours wherever you want.

"Has a bridge been washed out? In two hours, thanks to this wood which is easy to manage and to work, men will have made a new bridge. One is especially struck, at the beginning of this life which is so free and, more than any other, independent of men and things, by the great simplicity and ingenuity of all the procedures. Objects are rudimentary but practical, easy to make, soon ready and simple to repair. Everyone knows how to build ordinary furnishings, and no interruptions are caused here as they are when even the slightest damage occurs to one of our highly developed utensils, which only a specialist knows how to repair.

"A bamboo tube is a safe place for your maps and papers. It is a drinking glass, and it is also a pipe for smokers. On a larger scale, it is a bucket for carrying water, and the receptacle for all liquid and solid provisions. When provided with a handle it serves as a pot for the Laotians to cook their rice in, or to prepare syrup from the sugar palm. When torn into thongs it is used as rope and string. Ligatures of sapeks are threaded on kelates, or bamboo filaments, and this is what makes our new Indo-Chinese sou, with its round hole in the middle, so impractical. Those who preside over the striking of our coins are unaware that the kelate is square, a fact which the first comer from the interior could have told them. Baskets of all kinds are made with these same kelates for holding and transporting material. Hats are also made of them to provide shelter from the sun and rain. At night, when the stage of your journey is too long and you have to continue after nightfall even at the risk of meeting a tiger, setting fire to a bamboo branch is enough to frighten any off and to light your way. And not only is bamboo used to make torches, hats, string, dishes, furniture, houses and bridges, but it also serves as animal fodder and even as food for the natives, who eat the tenderest shoots as we would eat asparagus.

224 this animal has been hunted to excess and because of [346] the value of ivory, it has disappeared from certain regions. It is scarcely ever found now except in the valleys of the Sesane, the Se-Ia-Drang and the Srepok and in the Muong of Maha-Say in Lower Laos, and in Vien-Tiane, Tran-Ninh, the Hua-Pahn, the Sib-Song-Chau-Thai, etc., in Upper Laos.

313 For the last ten years or so the working of the teak forests in the Siamese and Shan territories of the basin of the Upper Menam (1) has

224 438 (1) Elephants are used in Siam to carry teak logs from the place where they are felled to nearby watercourses.

necessitated the use of an ever-increasing number of these pachyderms, among which overwork and accidents claim many victims. Thus to fill the gaps elephants have to be sought where there are still some left, and it is precisely in French Laos, on the left bank of the Mekong, that a few wild herds are still found.

Since there is no shortage of buyers, it is to the interest of the hunters to capture as many of these valuable animals each year as possible and to train them with a view towards selling them. Since demand even greatly exceeds supply, an inflationary tendency has resulted which has caused prices to rise by sixty to eighty percent. Besides the sum paid to the sellers, the purchasers have to pay an exit duty amounting to half of the purchase price. This tax, like other similar ones of which we shall speak later on, is levied to compensate for the real estate tax which Laos does not yet have.

224 The methods now used to capture wild elephants are identical, except for minor details, in all parts of Laos. In order to summarize 231 them and to provide a description of an elephant hunt, we shall have recourse to the interesting account which Captain Gosselin (2) has given.

(2) Le Laos et le Protectorat français, op. cit. [Paris, 1900.]

"At the beginning of the dry season, the owners of tame elephants make ready for the great beats which take place in the mountains near the Annam frontier. They train their elephants to run, so that they will develop speed, and manufacture immense ropes forty to fifty meters long, made from strands of buffalo hide [347] and rattan and strengthened with copper wire. A collar is fitted at one end of each rope which is large enough to be put around an elephant's neck, while a ring about sixty centimeters in diameter is fitted to the other end.

224 The rings and collars are made of the same materials as the ropes
•231 themselves.

"Towards the middle of November, a caravan composed of some ten of the largest elephants in the Muong leaves Mahasay. Each elephant bears two men, one of whom will be the carnac and the other the hunter. Many men follow the caravan on foot, some to keep it supplied with provisions and the others solely for their own pleasure...

"...As soon as the moon begins to appear above the trees the whole caravan sets out, the hunters following one another in single file. When confronted with a herd of wild elephants the whole troop falls on them, and the talent of the hunters then consists in separating a fairly young elephant, and one which seems a likely prospect for training, from its companions. The trained eye of the Laotian is very rarely deceived. Two hunters with trusty mounts then take charge of it, while the others hold off the enemy with trunk and tusk blows. Battle is often not necessary, and the attacked elephants which have been taken by surprise during a moment of repose think only of fleeing from their adversaries.

"It is then that speed is indispensable for the two elephants pursuing the chosen young one. When they have succeeded in placing it between the two of them, each hunter tries, by means of his pole, to pass the ring around its foot so as to impede its progress. The hunter who succeeds in achieving this difficult maneuver is the true vanquisher, for when this initial goal has been reached there is less danger involved in placing a second ring, and then the elephant is a captive. It utters cries and rolls on the ground, but to no avail, for its two adversaries use their strength to hold it. Overcome by fatigue, the prisoner finally stands up. The ropes holding it are fastened to trees, and with the help of several tame elephants which unite their efforts a leather collar which has previously been attached to large trees with ropes is fastened around its neck. Then only can the rings placed on its feet during the chase be removed. The captive is left thus for two days, without any food, so as to lose part of its strength. Only on the third day is it allowed to eat, and then the hunt begins again and continues in this fashion for two or three months. The elephants taken prisoner are led to the village by the tame elephants, and their training exercises are begun immediately."

The purpose of this special training is to subject the elephants to the will of its carnac, and then to accustom it to bearing burdens. It takes [348] about six months to tame a wild elephant and bring it to a point where it is perfectly docile.

000 to a point where it is perfectly docile.

231 The sale price of elephants varies with their size, their sex, their
435 age, and according to whether or not they have tusks and according to the quality and size of these latter. It also varies with the region.

At Outhai-Thani (Luang-Prabang) an elephant costs from 1,500 to 3,000 francs, and the cost is about the same at Vien-Tiane. In Lower Laos the price varies from 750 to 1,200 francs.

When an elephant dies it still leaves highly valuable remains, especially ivory.

237 1. Ivory.
438 A hundred kilograms of ivory sells for 1,800 francs at Outhai-Thani
435 (Luang-Prabang), from 935 to 1,770 francs in Nong-Khay, from 750 to 1,250 francs in Song-Khone, from 750 to 1,670 francs in Saravane, from 1,000 to 1,670 francs in Bassac and from 1,500 to 1,670 francs in Khong, Stung-Treng and Attopeu. Its average cost in Cholen (Cochinchina) is 2,500 francs per hundred kilograms.

2. Bones.

The price of elephant bones is generally from 12 francs 50 centimes to 15 francs per hundred kilograms.

3. Hides.

Elephant hides cost from 60 to 70 francs per hundred kilograms.

The remains of other elephants furnish the markets of Laos with the following products: rhinoceros horns and hides, horns and hides from buffalo and oxen, horns and hides from all the deer tribe, hides, talons and bones from the cat family, bear and otter pelts, scales from anteaters, tortoises and caymans, etc. To this list should be added snake venom, bear gall and soft hartshorn, which are regarded as specific remedies against certain diseases.

The prices of some of these products are as follows:

Rhinoceros horns	111 to 137 francs per kilogram
Rhinoceros hides	60 to 70 francs per 100 kilograms
Soft hartshorn	1,666 to 2,200 francs per 100 kilograms or 18 to 40 francs per pair
[349] Horns of stags, elk and bucks (hard)	25 to 75 francs per 100 kilograms
Hides of stags, elk, bucks, goats	37 to 83 " " " "
Wild buffalo horns	50 to 60 " " " "
Wild buffalo hides	46 to 50 " " " "
Ox horns	50 to 58 " " " "

Dry rice may be grown in the plains, but is generally cultivated in mountain rats, for the peoples who consume it are settled in the highlands. Indeed, the Khas are the ones who mainly practice its cultivation. The ratio of total dry rice production to that of glutinous rice is about one to four. 243

It is difficult to give any official figures, even approximate ones --for the reasons given above--regarding the total quantity of rice, whether the year be a good or bad one, which Laos produces. It differs, moreover, from one year to the next because of meteorological variations and also because of the damaging epizootic diseases which recur periodically, decimating the farming animals and forcing the inhabitants to reduce the area of their plantings. [231]

[355] One can, however, given the amount necessary for the subsistence of a family of five, deduce the approximate weight of rice which is indispensable for feeding any given group of people. 262 146

It is estimated that the average yearly consumption by a family of five is 28 piculs of paddy (1,700 kilograms), which yield about 17 piculs of threshed rice (1,026 kilograms). 243

Now the total population of Laos, which is estimated at 470,000, will normally contain 94,000 families of five, or groupings of five individuals of all ages and both sexes. On this basis it is easy to calculate that the amount of paddy needed to feed these 94,000 groups will be 2,632,000 piculs (159,800,000 kilograms) of paddy and 1,598,000 piculs (96,440,000 kilograms) of threshed rice.

In addition to this indispensable minimum merely for feeding the inhabitants, other quantities of rice are also necessary: 1) For fodder for certain animals and for making alcohol, pastry, etc., a consumption figure which we estimate at one-fifth of the above figure, or 526,400 piculs of paddy (31,794,560 kilograms) or 319,600 piculs of threshed rice (19,308,840 kilograms); 2) For seed and emergency reserves. These latter may be calculated at the rate of 5 piculs of paddy per house or per family of five, and require about 600,000 piculs of paddy (36,240,000 kilograms). 243 262 273

In recapitulation, it is clear that the amount of paddy which Laos ought to produce for food for its inhabitants, fodder for certain animals, the manufacture of alcohol, miscellaneous uses, seed and reserves is some 3,758,000 to 3,800,000 piculs or 226,983 to 229,520 tons, giving an average ratio of 1) 485 kilograms or 8 piculs of paddy per inhabitant; or 2) 2,425 kilograms or 40 piculs per family.

248 There are three harvests each year. In the first the shoots are .9 meter high, in the second 1.4 meters and in the third 1.6 meters. They yield, respectively, for an area of 14 square meters, 18, 20 and 24 kilograms of fiber.

At harvest time the shrub is split and left to soak in water for three hours, for the fiber is difficult to tear off. The work of decortication takes a long time, and this drawback has so far prevented the cultivation of this crop from spreading although it is an easy one on the whole and not at all exhausting for the soil, since it is possible to grow it twenty years in succession on the same plot of ground.

438 Exports from the provinces of southern Laos were more than fifty
248 tons in 1899. A great deal is used locally, since all the nets used for hunting and fishing are made with this fiber.

Prices are as follows (1):

248 (1) In view of the price at Bassac (37 francs), it would be ad-
435 vantageous to export this product to Cambodia, where it sells for twice as much.

	Per hundred kilograms
Plateau of the Bolovens	25 to 35 francs
Bassac	37 "
Saravane	60 "
Khong	60 to 80 "
Attopeu	30 "
Stung-Treng	54 to 62 "
Pnom-Penh	60 to 80 "

248 [367] HEMP. Hemp is grown in Upper Laos, but only for local consumption. It is used in making string, light rope, nets, etc. A very strong and fairly good-tasting alcohol is also extracted from its seeds. It is called "Pane" or "Nhia-Pane."

241 BATATAS. Various kinds of batatas which are more or less sweet
[262 are grown each year on the banks of the watercourses and in the still
231] moist sandy alluvia. These tubercles are chiefly consumed by the inhabitants, although small quantities are used to fatten certain animals, particularly pigs. The large variety of batata which is round and not very sweet is called "Mane-Phao" and the one which is elongated and sweeter is called "Mane-Keo."

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435 Here, as a sample, is a table showing cardamom production on the plateau of the Bolovens during the last few years, with purchase and sale prices:

Year	Production in kilograms	Price per hundred kilograms	
		On the plateau	At Pnom-Penh
		Purchase	Sale
		francs	francs
1895	120,000	37.50 to 50	66.20 to 85.60
1896	48,000 to 60,000	50 to 58.30	70 to 93
1897	96,000 to 108,000	50 to 62.50	77.80 to 97.30
1898	270,000	50 to 66.60	85.60 to 136.
1899	216,000	54.10 to 75	77.80 to 136

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231 [375] MULBERRY TREES. There are two kinds of mulberry trees for feeding silkworms in Laos: the annual mulberry and the shrub or perennial mulberry (1). In Laotian the latter is called "Kok-Mone,"

(1) It is no doubt to be identified with the multicauline mulberry and the white or Chinese mulberry.

which may be translated literally as silkworm tree.

[311] The mulberry is grown near villages, on the banks of watercourses. Oftentimes the foot of an arborescent mulberry will even be inundated during the rainy season, and it has been noted that the worms which devour the leaves of these trees are more subject than other worms to the diseases of the species and produce less silk. It is therefore probabl that excess humidity is harmful to the mulberry. But if at the present time most of these shrubs are planted in humid regions, this is due to the fact that in many places the higher ground has been abandoned and the inhabitants have settled in the bottoms of valleys. It will be understood that the natives like to have the gardens of mulberry trees

near their silkworm breeding houses, but it is unfortunate that the new conditions in which the trees are placed should have an adverse effect on silk production. On the plateaus and in the high valleys, in the vicinity of land once occupied by villages, there are many mulberry trees which have continued to survive. They send out new leaves again even after the annual burnings of the forest clearings, and bear leaves which are vigorous and have a more pithy appearance than those of their fellows in the low, humid parts of the country. They are also said to be preferable for feeding silkworms (2).

(2) See Appendix XXIV.

Local consumption absorbs the greater part of the silk production, for the majority of Laotians, both men and women, use it in making the garments which they wear.

We do not possess exact data on the total production of silk in Laos. It has been estimated at about twenty tons annually. The price varies from 400 to 500 francs per hundred kilograms.

OPIUM POPPIES. The opium poppy is cultivated by the Yaos and the Meos, in northern Laos. Towards the end of the rainy season, [376] in September, the poppy seeds are sowed broadcast on land from which maize has just been harvested. Germination is activated by the last rains of the season and the plant flowers at the beginning of December. Harvesting is done shortly after the petals have fallen.

Closely spaced lengthwise incisions are made all along the surface of the capsule, allowing the plant juice to escape. It coagulates upon contact with the air and is collected daily until the plant has been completely exhausted (1).

(1) See Appendix XXV, report of M. Lussan, Cochinchina customs agent. The latter was sent on a mission to Upper Laos to experiment with growing opium poppies by less rudimentary methods than the ones in use among the Meos and the Yaos.

PAPER TREES. There are several trees in Laos whose bark is used to make paper. They seem to be of the mulberry type and are called "Kok-Sa."

The paper is made by hand on forms, by extremely rudimentary methods. Its manufacture occupies several villages of northern Laos.

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of the highest merit entitled Petit traité d'Agriculture tropicale, by H.A. Alford Nicholls, translated from the English by E. Raoul (Paris, 1895, Challamel). This work, which is as complete as it is practical, cannot be too highly recommended.

IV

LIVESTOCK BREEDING

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Without speaking of the poultry which goes to feed the population, the Laotians engage in breeding elephants, horses, buffalo, oxen, pigs, goats and silkworms.

Elephants. Elephant breeding is profitable, even [397] though this animal does not acquire any commercial value until about its fifth year. It is true that young elephants do not necessitate any special care or any expense, since they always go with their mother and provide for their own food.

In one part of the kingdom of Luang-Prabang, in a province on the right bank of the Mekong which numbers scarcely 13,000 inhatitants (Outhai-Tani), there were a hundred some domesticated elephants in 1898, plus twelve young ones which were the result of breeding. If the example of this province were followed throughout all Laos the number of elephants would rapidly increase, and within a relatively short time would constitute a new source of wealth for the country, one part alone of which was said to possess a million of these animals before the Siamese incursions (1).

(1) The kingdom of Luang-Prabang used to be called "Lan-Xang," The Land of the million elephants.

But with each invasion which Laos underwent, especially during the nineteenth century, the Siamese, the Annamites and the Cambodians did not fail to take turns despoiling it of this veritable wealth in order to increase their own.

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In southern Laos, breeding consists mainly in the training of young animals which have been recently captured. Thus in the province of Ban-Mouang the vast plains of the Se-Kampho and the Sepien provide excellent pasturages for elephants. Indeed, there are always fifty or so newly captured animals in the vicinity of Ban-Pa-Pho, which are being trained for sale. It is to be regretted that these beautiful plains are not used for raising livestock in general and

231 elephants in particular.

[439] Exports of elephants from Lower Laos in 1899 numbered 115 animals worth 100,754 francs.

Horses. Most regions of Laos lend themselves to the raising of horses, although these animals do not occupy the prominent place which they might. On the contrary, an appreciable decrease in the number of horses has occurred, and it is difficult today to obtain suitable mounts in the immediate locality. The causes underlying this decrease seem to be the following:

[398] 1. The many purchases made in southern Laos for Cochinchina, Cambodia, Annam and Siam;

2. The high prices offered to breeders, leading them to get rid of their stud-horses and their mares.

As a consequence, mares have become rare in the country. As for stud-horses, it is difficult to obtain any, since horses find buyers as soon as they reach the age of two and are taken out of the [Illustration here] country. Most of the finest stallions have disappeared, and practically nothing but old horses, scarcely worthy of the name of stallions, are left.

651 231 It was to remedy this state of affairs that the Governor-general of Indo-China, acting on a proposal by the Superior Resident, created depots of stallions.

Premiums are also paid to breeders who put up mares for covering, and during three consecutive years a premium is also awarded to the issue if it is in good condition.

It would seem that the establishment of these depots has not yielded all the results which might have been expected.

[399] The stud-horses have not always been chosen with all the care desirable, and as for the Laotians, despite the premium which is paid them, they do not seem at all eager to put up their mares for covering.

Under present conditions, horse breeding cannot give good results. As long as the heads of province do not have chief guardsmen in their service who not only have a sufficient knowledge of horses, but above all have an interest in the matter, they will have to give up all hope, except for a few exceptions, of improving the breed of horses. Moreover, the pecuniary resources placed at their disposition seem to be insufficient. Not can too much reliance be placed on the natives, for whom the bait of premiums is not an effective stimulus.

[563] The breed of horses in Laos is therefore continuing to degenerate. Certain Kha tribes (Djarais and Rades), however, still possess very fine specimens, but these Khas will not sell their horses and mares except with a great deal of urging and at a very high price. They never come and offer their horses to buyers, and only by chance can the latter discover any by traveling through their villages. It is a certain fact that most of the fine horses of Phu-Yen and Binh-Dinh come from the region of the Rades (1).

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[654] (1) The establishment of a depot of stud-horses in Darlac, in the midst of these Kha tribes, may soon give excellent results from the point of view of production and breeding.

In southern Laos, no epizootic disease has yet been noted among horses. The same is not the case in northern Laos, where it causes great ravages every year in the province of Vien-Poukha. The progress of this epidemic has been described in the following manner by M. Garanger, former Government Commissioner at Vien-Poukha:

"Well before any exterior symptoms of the disease appear, the horse manifests a bad disposition, sulks over its food, carries its head low and is anxious to lie down. Its hair becomes dull.

"Then under the abdomen a swelling appears which extends from the breast to the testicles (to the vulva in mares). It rapidly increases in volume and grows as thick as a man's hand. The scrotum and penis (the vulva in mares) [400] take on an abnormal growth. Exploration by hand reveals considerable obstruction in the hollow space within the lower jaw, yet there is no discharge.

"The animal then has difficulty in walking, then the hindquarters act as though paralyzed. It falls down in the stable and remains down until death, which is not far off.

"The period of algidity varies in length. Old horses do not last more than seven or eight days after the swelling forms, while young animals may not die until around the twentieth day.

"The epidemic always strikes during the rainy season and seems especially active in July and August.

"If the carcass is opened after death it is found that the whole interior (viscera) is covered with thousands of little black dots the size of a pinhead. This disease seems to be extremely contagious. In vain did I practice isolation and burn three contaminated stables in succession. Yet it also breaks out spontaneously, since it struck at the same time in Vien-Poukha, in Xieng-Khong and in the brush,

231 whereas each group was separated by a distance of about sixty kilometers. Consequently no contact was possible and no passing animal could have transmitted the disease germ. I should add that some were in service and that others had been at rest for more than two months.

"A mule belonging to the group was stricken at the same time as the horses and died under the same conditions.

"Ruminants are not affected by this disease" (1).

(1) Contrary to this statement, the presence of this epidemic has been noted among herds of oxen in the Hua-Pahn and in Nong-Khay.

At Muong-Sai in the province of Luang-Prabang, many horses die of this epidemic. Epizootic disease has also put in an appearance at Vien-Tiane, where several horses died within a period of three or four days. One of the horses of the Tran-Ninh commissariat was stricken along the road a little while ago, while it was traveling towards Luang-Prabang.

In southern Laos the average height of horses is from 1.16 to 1.18 meters. The maximum height found was 1.3 meters. This relatively tall stature, for Indo-Chinese horses, can be noted among the specimens of Chinese origin, which are nearly all piebald (2).

(2) A peculiarity worth noting is that many horses sold by the Chinese caravans are gelded.

[401] The horses of northern Laos are less fine in appearance than those of the low regions. They are also said to be less spirited.

All these animals nevertheless perform great services, for they are very sure-footed, are not skittish and can go almost everywhere--through the rocks in the mountains and through the mud and on the narrow ricefield paths in the plains. One can place complete trust in their skill.

Although small in stature they are robust, quick, nervous, courageous and extremely temperate. Height is the only thing which they lack, and all our efforts ought to go towards producing finer animals. For this purpose, it is an absolute necessity to force the natives to modify their primitive methods of inducing reproduction. Indeed, they act with horses as they would with buffalo and oxen, and their manner of operation may be summed up as a complete absence of care and supervision and allowing nature to take its course.

231 Horses and mares live in the utmost liberty, and no selection is made for covering. The latter occurs completely at random, and mares are covered by the first old nag which is so inclined.

Nor is any greater supervision given to the young colts. They get their food where and as they can, for except for a few rich mandarins the natives never give paddy to their horses.

Furthermore, they are broken much too young. Most of the time they are soon wounded on the back, and since they are never bandaged their injuries often turn into great wounds which soon render them incapable of any service.

In sum, the first improvement ought to consist in the following: feeding and bandaging horses well, eliminating all specimens in covering which are inferior with respect to age and stature, and supervising the growth of offspring.

Once this first step has been taken, and when an improvement has been noted in the breed, a few Tarbes or Arabian stallions can be introduced into the land. Such a depot of stallions should be placed under some European who belongs to the French Stud-farm Department [Administration des Haras de France]. Under him as stablemen he should have Annamites [402] or better still Malays from Cambodia, who have special aptitudes for work as grooms and who are known as Sais (1) in Indo-China. For the present it will be of no use to employ

(1) Sais, donkey drivers in Egypt, coachmen and grooms in the Far East.

Laotians, until such time as they acquire more of the taste and habit for horses.

The establishment of this initial stud-horse depot would enable only a few commissionerships to regain a good stock of horses, and even then only animals at least four years old should be released. Thus no thought need be given for some time as yet to the commercial question, that is to say the exporting of fine horses.

As to the establishment in the principal commissionerships of depots of Tarbes or Arabian stud-horses, no thought need be devoted to this possibility either, since the resources of Laos are too scanty and can be utilized in a more useful fashion.

231 439 Here are the figures for exports of horses, in southern Laos only, for 1898 and 1899, together with their domestic prices and their sale prices at the outlet markets:

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Years	Number of animals exported	Average purchase price in Laos	Sale price at outlet markets
		francs	francs
1898	103 Horses	50	112.50
1899	185 Horses	From 30 to 125	From 88.50 to 225
	14 Mares	From 30 to 75	From 40 to 95

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Finally, we recommend the introduction of donkeys into Laos, with a view toward producing mules by coupling the donkeys with Laotian mares. The mules of Yunman, which are highly reputed, reach heights as great as 1.32 meters. Extremely sturdy, they can readily carry a net weight of ninety kilograms of merchandise, not counting the saddle and pack-saddle. It is obvious that much use might be made of these animals in Laos for all kinds of transport.

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Buffalo. Buffalo breeding is much in honor throughout all of Laos. It supplies the needs of agriculture and of food consumption, which [403] absorbs a large number of these animals, particularly young ones. Many of them, in fact, are sacrificed on the occasion of celebrations and various ceremonies, while others are used daily for food in some of the larger centers.

It may truly be said that buffalo are raised everywhere, and since this animal is extremely hardy it can always find enough to eat, even in the forests.

The administration is encouraging the raising of buffalo in a most effective way, and since our arrival in Laos the work has grown by such proportions that exports of buffalo to nearby regions has assumed genuine importance. (4,721 head in 1898 and 3,144 in 1899.) When we entered into possession of Laos, however, the land had been largely depopulated of its animals. They had been removed by the Siamese, and it is nothing short of miraculous that the herds have been restored in so short a time despite the considerable losses caused by periodic outbreaks of epizootic disease, often extremely violent.

These favorable results have been achieved thanks to the wise foresight of the higher authorities, who prohibited all exports and imports as long as the bovine plague lasted.

231 654 It is much to be desired that the work of our physiologists may finally be successful and place at the disposal of everyone serums which will be capable of fighting the epizootic diseases which are decimating horned animals. In the meantime our administrators can only recommend to the natives a few rules of veterinary hygiene, a feeble protective measure against the epidemic. They should be particularly careful to see that dead carcasses are not thrown into watercourses.

231 492 262 825 Oxen. In Laos, oxen are raised mainly for use in transport or for export as animals for slaughtering. In the far north they are also harnessed to carts.

The Laotians have an instinctive repugnance for beef meat, and eat it only when an animal dies by accident or has to be killed as the result of a wound or broken bone. There are even certain prejudices and certain customs in this matter, which are doubtless vestiges of another age when the ancestors of the present-day inhabitants were pastoral people among whom slaughtering [404] oxen for food was prohibited under penalty of a fine.

231 Whereas the buffalo in Laos are sturdy and of a fine height, the oxen often leave much to be desired. This is due to the fact that the natives raise oxen as they do buffalo, that is to say by leaving it to forage for itself. Although the buffalo, a hardy and autochthonous animal, requires almost no care in breeding, the ox, which is a cross-bred animal, imported and not so tough, requires a great deal of care and management. But when ox raising is treated like buffalo raising, the result is an inferior product and thence a progressive degeneration of the breed.

The Youns, the Lus and the Burmese are the only ones who have a complete mastery of raising oxen as draft and pack animals, and who produce individuals of comparatively tall stature which are sturdy, courageous and resistant to fatigue. They are even able, thanks to suitable treatment and care, to condition and train the often puny specimens which they sometimes go great distances to buy, even into southern Laos.

231 439 The oxen of Song-Khone (1) and of the Kham-Thong--Nial-Saravane region are destined mainly to be sold for meat in Cambodia and in Cochinchina, and this is quite a lucrative trade.

(1) In 1898 the presence of about 1,500 oxen and cattle was reported in this province.

Cochinchina, and this is quite a lucrative trade.

231 178 The following are the main points in Laos where the raising of oxen would have a good chance of success, in view of the nature of the soil and the forage plants which grow there:

1. Northern Laos. Valleys of the upper Nam-Tha; plain of Muong-Sing; plains of the Mekong and of the Nam-Hou in the province of Luang-Prabang; valleys of the Nam-Het and of the upper Song-Ca; plains of Tran-Ninh (2); plains between the Mekong, the Nam-Tone

[175 727] (2) Tran-Ninh used to be the greatest livestock region in Laos as recently as thirty some years ago, and all the buffalo and oxen needed in nearby regions came from there. The occupation of the region by the Hos and its pitiless depopulation by the Siamese completely halted this form of industry. It is beginning to be reborn with the peace and order which we have brought to this region, and the herds are reforming. Exports have already begun again in the last year.

Livestock is the principal form of wealth of the region, and could yield high profits to a European company which had sufficient capital at its disposition to engage in large-scale breeding. [113] (Bulletin économique de l'Indo-Chine, December 1900. Report of the Superior Resident on Tran-Ninh.)

and the Nam-Ngum, in the province of Vien-Tiane.

[405] 2. Southern Laos. Plain of Tha-Khek and basin of Mahasay, in the province of Cammon; plains of the Mekong, valleys of the Se-Bang-Hien and of its tributaries in the province of Song-Khone; plains between the Se-Set and the Sedone, valley of the Se-Katam, slope of Pou-Pai-Mai, in the province of Saravane; valleys of the Bla (1), of the Poko and of the Ayoun, in the province of

(1) The raising of oxen might be greatly increased here. In all the villages, especially the Catholic villages, I saw superb herds containing animals with every fine point. If breeding is not more extensive here, this is because the prices offered at Ang-Ke are not greatly higher than those at which the animals are sold in the region, since the Khas use large numbers of them to supplant buffaloes in their superstitious ceremonies. [113] (Bulletin économique de l'Indo-Chine, December 1899. Notes by the Superior Commandant of Lower Laos on the eastern region of Lower Laos.)

231 178 Attopeu; slopes of the plateau of the Bolovens; plains of the Se-Kampho and of the Se-Pien (2); plains of the upper Sebang-Khan and of the

(2) I have never crossed these great and beautiful plains which stretch as far as the eye can see between these two rivers which have water all year long, intersected here and there by wooded hills whose slopes provide the herds with a refuge and with a guaranteed food supply during the inundation of the lowlands--an inundation lasting three or four months--without regretting that no European colonist has ever thought of taking advantage of this situation. (Report of the Superior Commandant of Lower Laos, April 1897.)

Ia-Drang.

231 435 The sale prices for buffalo and oxen vary from one point to another and are also subject to fluctuations due to the age, stature, abundance or scarcity of the stock, the law of supply and demand, etc.

In 1899 livestock exports from Lower Laos only were 2,184 oxen valued at 54,600 francs, 362 cows valued at 5,430 francs and 3,144 buffalo valued at 235,800 francs, or a total of 6,690 head with a value of 295,830 francs.

In Lower Laos buffalo sold for from 50 to 112 francs in 1899, and oxen for from 20 to 30 francs. In Upper Laos the prices for [406] buffalo varied from 60 to 110 francs. Oxen may cost more or less there, depending on whether they are trained as draft and pack animals or fattened for export. In the first case they bring from 40 to 70 francs and in the second from 10 to 15 francs.

231 262 Pigs. Pigs are used mainly for food by the natives, who consume a great many. The meat of this animal enjoys great favor among the population, and it is pork which, prepared either alone or with fish, enters most often into the composition of meals. [Illustration here]

[563] The Lus, the Meos, the Chinese and the Khas are past masters at raising pigs, and their stock might figure successfully in our regional competitions. They fatten them in closed compartments, after first castrating them.

231 The most common variety is the one known as "Cochinchinese or Tonkinese pig." It is gray with white spots and sometimes almost black, and bears on its back a mane of long, stiff bristles similar to those of the wild boar. Even when domesticated these pigs have

231 highly developed canine teeth.

There is another variety, not so tall and lighter in color, which is widespread mainly among the Laotian population on the banks of the Mekong and its tributaries.

[407] Cammon exports pigs to Annam. In 1899, 6,038 of these animals representing a value of 30,565 francs were exported from this province.

Chickens. The Meos have a variety of chicken which is much taller than the chickens of the plains. They make a current practice of caponizing, and this procedure produces chickens which are highly esteemed by Europeans for the firmness of their meat and the delicacy of their taste.

Goats. The raising of goats does not call for any particular remarks. It is done naturally without any particular care, and is localized in northern Laos. In southern Laos goats are found only in the wild state. Europeans have brought in a few domesticated goats for their own use.

231 185 Sheep. It would be interesting to try sheep raising on the high plateaus of northern Laos. It has been denied that any undertaking of this nature could succeed, but it would seem that no serious attempt has as yet been made. It would first be necessary to choose a breed capable of multiplying on ground similar to that of northern Laos with respect to altitude, climate, forage, hygrometric conditions, constitution of the soil, etc. Since sheep do not withstand humidity well, it would also be necessary to move the flocks to high, dry points during the months of the rainy season. Afterwards, at the beginning of the dry season, they could be returned to pasturages in the plains.

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CHAPTER VIII

1. NUMBERS, WEIGHTS, MEASURES AND COINAGE

805 802 Since numbers, weights, measures and coinage serve as a basis for all transactions and all commercial evaluations, we shall here

149: Reinach--323 G-3 (no date) 1901 AM1 Indochina Laotians AM8

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A) ANIMALS

Total exports from Lower Laos during 1898

Kind	Average purchase price of animal	Average sale price outside Lower Laos	Number of animals exported	Total value of animals exported. Average purchase price in country	Total value of animals exported. Average sale price	Observations
Elephants	350$	1,200$	192	67,200$	230,400$ (1)	(1) Prices offered in teak yards along the Menam.
Horses	20	45	103	2,060	4,635	
Buffalo	20	36	4,721	94,420	169,956	
Steers	9	20	1,056	9,504	21,120	
Pigs	3	6	500	1,500	3,000	
		Totals	6,572	174,684$	429,111$	

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149: Reinach--324 G-3 (no date) 1901 AM1 Indochina Laotians AM8

B) ANIMALS

Total exports from Lower Laos during 1899

Kind	Average purchase price of animal	Average sale price outside Laos	Number of animals exported	Total value of animals exported. Average purchase price in country	Total value of animals exported. Average sale price	Observations
Pigs	2 to 4$	4 to 8$	6,038	12,226$	24,452$	
Steers	8 to 12	10 to 24	2,184	21,840	43,680	
Cows	4.80 to 8	6 to 10	362	2,172	2,896	
Buffalo	20 to 45	35 to 80	3,144	94,320	157,200	
Horses	12 to 50	35 to 90	185	5,550	11,100	
Mares	12 to 30	16 to 38	14	280	400	
Elephants	300 to 450	12 to 1600	115	40,300	172,200	
		Totals	12,042	176,688$	411,928$	

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with the greatest value on European markets, but woods which are very common in Indo-China are often just as highly esteemed. Among others we may cite the "Mai-Niang," the "Mai-Thon" (mock walnut), the "Mai-Deng" (rosewood), the "Mai-Dou" (thuja), the "Mai-Lang-Dam" (ebony), etc.

a great many other varieties of trees could be used to feed the sawmill and, like alcohol, find an easy outlet in Cambodia and Cochinchina.

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[519] Finally, one other enterprise might be attempted. This is livestock breeding and particularly the raising of oxen, which sell in Cambodia and Cochinchina for double their value in their country of origin. We have previously mentioned some of the points which would be particularly well-suited to undertakings of this nature. The greatest hazard to be feared is the appearance of epizootic epidemics such as the ones which occur almost periodically and against which there is no weapon. The Pasteur Institute of Nha-Trang does not send out [Illustration here] anti-plague serum as is done with cowpox vaccine, for as yet its incoulation must be left in the hands of specialists.

We believe that the system of livestock leasing would perhaps yield good results with the Laotian peasants.

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Since no serious attempt has as yet been made in Laos, it is difficult to treat of agricultural enterprises which Europeans might undertake. Nor must we forget that affairs of this sort require comparatively large sums of capital and professional knowledge which takes a long time to acquire. It is, moreover, up to the administration to provide the initial impetus, for it has the necessary means, equipment and personnel. When plantations have succeeded it [520] will easily find colonists to continue the work which has been begun, and capital will then find its way into Laos.

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Speaking for ourselves, we are persuaded that this land will soon be open to colonization. Only the coast of Indo-China is well-known, and on the day when it has been demonstrated that the mountains as well are a source of wealth, the fortune of Laos will be made. There is a blank page on which it is up to us, by profiting from the gropings and errors of the past, to trace the principles of true colonization, which provides well-being for the population and creates outlets for our industry and our commerce.

A very high official of Laos recently wrote, speaking of the development of this land: "Once everything was for Tonkin and

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traditions and the annals which I have been able to consult, they are the descendants of the last kings of the land before the Cham invasion. The kings of Cambodia have had to appeal to them for help on one or two critical occasions, and it was in return for services rendered that the king of Cambodia, up until recent times, used to send them presents every year (annual tribute, according to them, payment of which stopped only five years ago).

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They have never been willing to recognize our authority. The king of Pa-Tac-la, who is situated on the Laotian side, twice attacked the Government Commissioners of Stung-Treng when the latter were making a tour of inspection in this region, first in December 1894 and a second time in January 1897. They were given a severe lesson this second time, for the village was entirely destroyed and they suffered many losses. The Sadete Loum (the Master of water) settled on the Annamite side alongside the Master of fire after the affair, and since that time has given no further orders to our faithful Djarais.

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APPENDIX XIX
NOTE ON THE MEOS

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The Meo has a savage and distrustful character. He does not like the presence of foreigners, or even of people of his own race. Clinging to the side of a mountain, and always as high up as possible, he asks only to be allowed to live in peace in his wild solitude and bodes no ill to anyone provided he is left alone and independe

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He is a great hunter of wild beasts and large game. More industrious than the Thais, he makes all his farming implements himself (picks and shovels), as well as his wooden buckets and mills for grinding maize and paddy. He raises fine poultry, pigs, oxen, goats and horses with particular care and success. If he stays in one place for any length of time he also produces, in addition to the maize and rice which form the basis of his food supply and the opium which he smokes, very fine eggplants, gourds, sweet potatoes and non-sweetened batatas very much like the common potato, sorrel, green beans and all the French vegetables whose seeds are given him. On his heights he cultivates the fruit trees which merely vegetate in the plains, such as the peach tree, and the peaches which he harvests can compete without any fear with those of our own country.

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The Meo climbs like a cat. Over sheer paths, up ladders composed of a single bamboo pole standing upright in which notches are cut at regular intervals which are large enough for two toes, the Meo

149: Reinach--444 G-3 (no date) 1901 AM1 Indochina
Laotians AM8

249 It is reckoned that about 100 tobacco plants are needed to supply one "mun" of cut tobacco, and this would mean, in accordance with what has been said above, a yield of 1,800 to 3,000 kilograms per hectare.

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APPENDIX XXIV
NOTE ON SERICULTURE

• 231 178 It would appear that sericulture was once one of the most active branches of the country's industry. It must even have been quite extensive, if we are to rely on the sayings of the older folk who deplore its present decline.

231 Today the production by this entirely familial breeding industry is not as great as it used to be and its quality leaves much to be desired, as does the general yield from the silkworms. This decline stems both from certain unfavorable climatic conditions and from a defective food supply for the worms resulting from the poor state of mulberry tree cultivation.

Since the temperature in places where there are silkworm breeding houses never falls below a certain point, except perhaps during a few nights in the cold season, there can be no wintering for the silkworms. As a consequence there is never any stop to the fecundation, egg-laying, incubation, hatching and rearing of the worms, and all these operations can be carried out continuously all year long.

Under such a regimen it is not surprising that the native varieties of silkworms should degenerate and produce only a mediocre and rather scanty yield. From the point of view of breeding returns, there are considerable losses. Thus if eight females lay 2,500 to 3,000 eggs, for example, these will yield only 250 or 300 worms; and only half of the latter, that is to say about 125 or 150, will reach a final stage of development and spin a cocoon. This return amounts to only ten percent of the eggs placed in incubation and fifty percent of the worms subsequently hatched.

Fecundation and egg-laying. The male and female insects which have been selected and chosen for reproduction are mated for fecundation. Afterwards the females are separated from the males, which serve no further purpose, and placed in groups of six or eight on a small square of cottonstuff which is covered with an ordinary porcelain bowl. [146] The females lay their eggs, and when they have done so some 2,500 or 3,000 eggs are found on the

231 square of cotton.

Incubation. Each square of cotton containing silkworm eggs is hung up with its corners gathered together in the silkworm rearing-house. Here the surrounding temperature prevails in summer, and the house is slightly heated in winter. Great care is taken to protect the eggs from attacks by ants. Hatching occurs seven or eight days later, depending on the season, and the number of eggs hatched amount to about ten percent of the eggs placed in incubation, as we have just noted.

Rearing. From the time when incubation is over until the cocoons are spun, 34 or 35 days are reckoned, as follows:

1. From hatching to the end of the fourth mutation or age, four periods of six days each, or 24 days in all.

2. From the fourth mutation to the "rising," 8 to 10 days, at the end of which time each worm spins its cocoon within a space of one day.

Food is administered in the following proportions:

1. From hatching to the fourth mutation, three meals per day of finely chopped mulberry leaves.

2. From the fourth mutation to the rising, four meals per day of mulberry leaves which have been cut into four pieces if they are excessively large, or into two if they are of the usual size.

The transformation of the chrysalis into a moth takes place ten days after the cocoon is sealed. During the first three days of this period a selection is made of the finest cocoons, the insects in which will be used for reproduction. The other cocoons are then unwound.

At the present time and with the existing varieties of worms, about 800 raw cocoons empty of their insects are required to make up a weight of 100 grams. The cocoons may be either yellow or cream-colored, and their color can be predicted by examining the abdomen and rear legs of the worms. The yellow cocoons are the most numerous and represent about 75 percent of the total.

During the rearing period, silkworm losses due to disease generally amount to fifty percent.

283 231 **Reeling off the cocoons and spinning the thread.** These operations are carried out during the nine days which follow the formation of the cocoon, and before the moth has broken through. The methods employed are quite rudimentary, and consist in throwing some fifty cocoons into an earthenware pot containing boiling water. The pot is surmounted by a reel fastened to its rim. Nine or ten strands of silk coming from the same number of cocoons are wound

283 231 together with the aid of a slotted thread gauge to produce one thread of raw silk. Tension on the strands is provided by hand as they are wound, and the thread is wound on the drum of the reel. From this process there results an uneven thread with many nodosities, especially in the case of the third-grade thread which comes from the cocoon floss.

[147] **Production.** Fifty cocoons usually produce 2.25 grams of raw silk. This includes three different grades, in the following proportions:

1. First grade, glossy, fine and regular silk: 25 centigrams;
2. Second grade, less glossy silk, semi-fine and fairly regular: 50 centigrams;
3. Third grade, dull, coarse and irregular silk, 1.5 grams.

It is reckoned that 2,000 to 2,500 cocoons are required on the average to produce one kilogram of silk.

In summary, 800 raw and empty cocoons weigh 100 grams. When reeled off these 800 cocoons yield only 36 grams of silk. Thus there is a loss of 64 grams, representing 64 percent of the weight of the cocoons and thereby constituting a waste product composed of unwindable fragments, whereas the amount which can be utilized is only 36 percent (1).

(1) Report by P. Macey.

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APPENDIX XXV
NOTE ON THE CULTIVATION OF OPIUM POPPIES

249 Poppies are grown in all the high regions inhabited by the Meos and especially in the north of Upper Laos. But the latter scarcely grow any but the amount which they themselves need each year, and are content merely with selling their surplus, if there is any.

Their method of cultivation is extremely primitive. They begin by burning the trees and brush in order to clear the soil, then spade up the ground to a depth of about five centimeters and sow the seed in the first two weeks of September. They try to choose hillsides which are exposed to the rising sun, and do not irrigate the land.

If rain is plentiful they obtain one or two capsules per plant by this manner, on the average. If rain is scarce, then the yield is nil. They do not use any kind of fertilizer.

Poppies thrive especially in clay soil with a substantial,sound

Fig. XVIII. Luang Prabang. Training an elephant (Cl. Deydier). [158]

1738 Deydier --75 H. B-8 (no date) 1952. AMI Indochina
(ca. 1940) Laotians AM8